

§ 178.700

(iv) The outer packaging must pass the stacking test in §178.606 while empty. The total weight of identical packages must be based on the combined mass of inner receptacles used in the drop test in paragraph (d) of this section.

(v) For inner receptacles containing liquids, an adequate quantity of absorbent material must be present to absorb the entire liquid contents of the inner receptacles.

(vi) If the outer packaging is intended to contain inner receptacles for liquids and is not leakproof, or is intended to contain inner receptacles for solids and is not sift proof, a means of containing any liquid or solid contents in the event of leakage must be provided. This can be a leakproof liner, plastic bag, or other equally effective means of containment.

(vii) In addition, the marking required in §178.503(f) of this subchapter must be followed by the letter "U".

Subpart N—IBC Performance-Oriented Standards

SOURCE: Amdt. 178-103, 59 FR 38068, July 26, 1994, unless otherwise noted; 66 FR 45386, Aug. 28, 2001.

§ 178.700 Purpose, scope and definitions.

(a) This subpart prescribes requirements applying to IBCs intended for the transportation of hazardous materials. Standards for these packagings are based on the UN Recommendations.

(b) Terms used in this subpart are defined in §171.8 of this subchapter and in paragraph (c) of this section.

(c) The following definitions pertain to the IBC standards in this subpart.

(1) *Body* means the receptacle proper (including openings and their closures, but not including service equipment), that has a volumetric capacity of not more than three cubic meters (3,000 L, 793 gallons, or 106 cubic feet) and not less than 0.45 cubic meters (450 L, 119 gallons, or 15.9 cubic feet) or a maximum net mass of not less than 400 kg (882) pounds.

(2) *Service equipment* means filling and discharge, pressure relief, safety, heating and heat-insulating devices and measuring instruments.

(3) *Structural equipment* means the reinforcing, fastening, handling, protective or stabilizing members of the body or stacking load bearing structural members (such as metal cages).

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(4) *Maximum permissible gross mass* means the mass of the body, its service equipment, structural equipment and the maximum net mass (see §171.8 of this subchapter).

[Amdt. 178-103, 59 FR 38068, July 26, 1994, as amended by Amdt. 178-108, 60 FR 40038, Aug. 4, 1995; 66 FR 45386, 45387, Aug. 28, 2001]

§ 178.702 IBC codes.

(a) Intermediate bulk container code designations consist of: two numerals specified in paragraph (a)(1) of this section; followed by the capital letter(s) specified in paragraph (a)(2) of this section; followed, when specified in an individual section, by a numeral indicating the category of intermediate bulk container.

(1) IBC code number designations are as follows:

Type	For solids, discharged		For liquids
	by gravity	Under pressure of more than 10 kPa (1.45 psig)	
Rigid	11	21	31
Flexible	13		

(2) Intermediate bulk container code letter designations are as follows:

"A" means steel (all types and surface treatments).

"B" means aluminum.

"C" means natural wood.

"D" means plywood.

"F" means reconstituted wood.

"G" means fiberboard.

"H" means plastic.

"L" means textile.

"M" means paper, multiwall.

"N" means metal (other than steel or aluminum).

(b) For composite IBCs, two capital letters are used in sequence following the numeral indicating IBC design type. The first letter indicates the material of the IBC inner receptacle. The second letter indicates the material of the outer IBC. For example, 31HA1 is a composite IBC with a plastic inner receptacle and a steel outer packaging.

[Amdt. 178-103, 59 FR 38068, July 26, 1994, as amended at 66 FR 45386, Aug. 28, 2001]

§ 178.703 Marking of IBCs.

(a) The manufacturer shall:

(1) Mark every IBC in a durable and clearly visible manner. The marking may be applied in a single line or in multiple lines provided the correct sequence is followed with the information required by this section in letters, numerals and symbols of at least 12 mm in height. This minimum marking size applies only to IBCs manufactured after October 1, 2001). The following information is required in the sequence presented:

(i) The United Nations symbol as illustrated in §178.503(e)(1). For metal IBCs on which the marking is stamped or embossed, the capital letters 'UN' may be applied instead of the symbol.

(ii) The code number designating IBC design type according to §178.702(a). The letter "W" must follow the IBC design type identification code on an IBC when the IBC differs from the requirements in subpart N of this part, or is tested using methods other than those specified in this subpart, and is approved by the Associate Administrator in accordance with the provisions in §178.801(i).

(iii) A capital letter identifying the performance standard under which the design type has been successfully tested, as follows:

(A) X—for IBCs meeting Packing Group I, II and III tests;

(B) Y—for IBCs meeting Packing Group II and III tests; and

(C) Z—for IBCs meeting only Packing Group III tests.

(iv) The month (designated numerically) and year (last two digits) of manufacture.

(v) The country authorizing the allocation of the mark. The letters 'USA' indicate that the IBC is manufactured and marked in the United States in compliance with the provisions of this subchapter.

(vi) The name and address or symbol of the manufacturer or the approval agency certifying compliance with subparts N and O of this part. Symbols, if used, must be registered with the Associate Administrator.

(vii) The stacking test load in kilograms (kg). For IBCs not designed for stacking, the figure "0" must be shown.

(viii) The maximum permissible gross mass or, for flexible IBCs, the maximum net mass, in kg.

(2) The following are examples of symbols and required markings:

(i) For a metal IBC containing solids discharged by gravity made from steel:



11A/Y/02 92/USA/ABC/5500/1500

(ii) For a flexible IBC containing solids discharged by gravity and made from woven plastic with a liner:



13H3/Z/03 92/USA/ABC/0/1500

(iii) For a rigid plastic IBC containing liquids, made from plastic with structural equipment withstanding the

stack load and with a manufacturer's symbol in place of the manufacturer's name and address:



31H1/Y/04 93/USA/M9399/10800/1200

(iv) For a composite IBC containing liquids, with a rigid plastic inner receptacle and an outer steel body and

with the symbol of a DOT approved third-party test laboratory:



31HA1/Y/05 93/USA/+ZT1235/10800/1200

(b) *Additional marking.* In addition to markings required in paragraph (a) of this section, each IBC must be marked as follows in a place near the markings required in paragraph (a) of this section that is readily accessible for inspection. Where units of measure are used, the metric unit indicated (e.g., 450 L) must also appear.

(1) For each rigid plastic and composite IBC, the following markings must be included:

- (i) Rated capacity in L of water at 20 °C (68 °F);
- (ii) Tare mass in kilograms;
- (iii) Gauge test pressure in kPa;
- (iv) Date of last leakproofness test, if applicable (month and year); and
- (v) Date of last inspection (month and year).

(2) For each metal IBC, the following markings must be included on a metal corrosion-resistant plate:

- (i) Rated capacity in L of water at 20 °C (68 °F);
- (ii) Tare mass in kilograms;
- (iii) Date of last leakproofness test, if applicable (month and year);
- (iv) Date of last inspection (month and year);

(v) Maximum loading/discharge pressure, in kPa, if applicable;

(vi) Body material and its minimum thickness in mm; and

(vii) Serial number assigned by the manufacturer.

(3) Markings required by paragraph (b)(1) or (b)(2) of this section may be preceded by the narrative description of the marking, e.g., “Tare Mass: * * *” where the “* * *” are replaced with the tare mass in kilograms of the IBC.

(4) For each fiberboard and wooden IBC, the tare mass in kg must be shown.

(5) Each flexible IBC may be marked with a pictogram displaying recommended lifting methods.

(6) For each composite IBC, the inner receptacle must be marked with at least the following information:

(i) The code number designating the IBC design type, the name and address or symbol of the manufacturer, the date of manufacture and the country authorizing the allocation of the mark as specified in paragraph (a) of this section;

(ii) When a composite IBC is designed in such a manner that the outer casing

is intended to be dismantled for transport when empty (such as, for the return of the IBC for reuse to the original consignor), each of the parts intended to be detached when so dismantled must be marked with the month and year of manufacture and the name or symbol of the manufacturer.

[Amdt. 178-103, 59 FR 38068, July 26, 1994, as amended by Amdt. 178-119, 62 FR 24743, May 6, 1997; 64 FR 10782, Mar. 5, 1999; 65 FR 50462, Aug. 18, 2000; 65 FR 58632, Sept. 29, 2000; 66 FR 33451, June 21, 2001; 66 FR 45387, Aug. 28, 2001]

§ 178.704 General IBC standards.

(a) Each IBC must be resistant to, or protected from, deterioration due to exposure to the external environment. IBCs intended for solid hazardous materials must be sift-proof and water-resistant.

(b) All service equipment must be so positioned or protected as to minimize potential loss of contents resulting from damage during IBC handling and transportation.

(c) Each IBC, including attachments, and service and structural equipment, must be designed to withstand, without loss of hazardous materials, the internal pressure of the contents and the stresses of normal handling and transport. An IBC intended for stacking must be designed for stacking. Any lifting or securing features of an IBC must be of sufficient strength to withstand the normal conditions of handling and transportation without gross distortion or failure and must be positioned so as to cause no undue stress in any part of the IBC.

(d) An IBC consisting of a packaging within a framework must be so constructed that:

(1) The body is not damaged by the framework;

(2) The body is retained within the framework at all times; and

(3) The service and structural equipment are fixed in such a way that they cannot be damaged if the connections between body and frame allow relative expansion or movement.

(e) Bottom discharge valves must be secured in the closed position and the discharge system suitably protected from damage. Valves having lever closures must be secured against accidental opening. The open or closed po-

sition of each valve must be readily apparent. For each IBC containing a liquid, a secondary means of sealing the discharge aperture must also be provided, e.g., by a blank flange or equivalent device.

(f) IBC design types must be constructed in such a way as to be bottom-lifted or top-lifted as specified in §§ 178.811 and 178.812.

[Amdt. 178-103, 59 FR 38068, July 26, 1994, as amended at 66 FR 45386, Aug. 28, 2001]

§ 178.705 Standards for metal IBCs.

(a) The provisions in this section apply to metal IBCs intended to contain liquids and solids. Metal IBC types are designated:

(1) 11A, 11B, 11N for solids that are loaded or discharged by gravity.

(2) 21A, 21B, 21N for solids that are loaded or discharged at a gauge pressure greater than 10 kPa (1.45 psig).

(3) 31A, 31B, 31N for liquids or solids.

(b) Definitions for metal IBCs:

(1) *Metal IBC* means an IBC with a metal body, together with appropriate service and structural equipment.

(2) *Protected* means providing the IBC body with additional external protection against impact and abrasion. For example, a multi-layer (sandwich) or double wall construction or a frame with a metal lattice-work casing.

(c) Construction requirements for metal IBCs are as follows:

(1) *Body*. The body must be made of ductile metal materials. Welds must be made so as to maintain design type integrity of the receptacle under conditions normally incident to transportation.

(i) The use of dissimilar metals must not result in deterioration that could affect the integrity of the body.

(ii) Aluminum IBCs intended to contain flammable liquids must have no movable parts, such as covers and closures, made of unprotected steel liable to rust, which might cause a dangerous reaction from friction or percussive contact with the aluminum.

(iii) Metals used in fabricating the body of a metal IBC must meet the following requirements:

(A) For steel, the percentage elongation at fracture must not be less than 10,000/Rm with a minimum of 20 percent; where Rm = minimum tensile